

Echinoderes arlis, a New Kinorhynch from the Arctic Ocean

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THE FIRST KINORHYNCH to be reported from within the Arctic Circle was *Centroderes arcticus* (Steiner, 1919) new combination. This species was originally described in one of several invalid "larval genera," the genus *Centropsis* Zelinka, 1907. Steiner's description is such that if a closer study were possible his species might be better assigned to the genus *Campyloderes* Zelinka, 1907, the only other genus in the family Centroderidae Zelinka, 1907.

The family Echinoderidae Bütschli, 1876 has been reported from as far north as Bergen, Norway (Schepotieff, 1907:134) and the northern Baltic Sea (Levander, 1900:19; Karling, 1954:189). The southernmost limit of this family's distribution is South Georgia Island in the southern Atlantic (Lang, 1949: 17). Members of the single genus within this family, *Echinoderes* Claparède, 1863, are widely distributed and are very common representatives of the phylum Kinorhyncha.

The species described in this paper is the first member of the genus *Echinoderes* reported from within the Arctic Circle and is from the greatest recorded depth for the phylum.

Genus *Echinoderes* Claparède, 1863

Echinoderes arlis n. sp.

Figs. 1 and 2

DESCRIPTION: Holotypic female, 420 μ trunk length (trunk length measured between anterior margin of segment 3 and posterior margin of segment 13); msw-10, 85 μ (maximum sternal width at segment 10—a measurement across the anterior margin of widest sternal plates); sw-12, 70 μ (sternal width at segment 12—a similar measurement); trunk length—msw ratio 4.9:1, trunk length—sw-12 ratio 6.0:1.

Second segment with 16 anteriorly rounded

placids, midventral placid truncate, distinctly larger than others; trichoscalid plates not observed.

Trunk segments (segments 3–13) with numerous hairs, often very long, up to 17 μ , pattern distinctive (Figs. 1 and 2).

Posterior border of each trunk segment with pectinate fringe except for terminal tergal plate.

Middorsal spines long, on segments 6, 8, and 10, 73 μ , 92 μ , and 125 μ ; lateral spines on segments 8–11, all approximately 42 μ in length; accessory lateral spines of segment 13, 67 μ in length, 0.32 \times the lateral terminal spines; lateral terminal spines 210 μ in length, 0.50 \times the trunk length.

Posterior margin of terminal tergal plate deeply incised, forming broadly rounded margins which abruptly form elongate spinous projections (Figs. 1 and 2); sternal plates of terminal segment with broadly rounded margins positioned anterior to the limits of the tergal margin.

Pachycycli (thickened anterior margins of the trunk segments) well developed; muscle scars prominent only on medial portion of twelfth sternal plates.

Pigmented eye-spots not noted due to preservation; adhesive tubes 20 μ in length, on ventral surface of segment four, directly anterior to tergal-sternal junction of fifth segment.

Allotypic male, 382 μ trunk length; msw-10, 73 μ ; sw-12, 65 μ ; trunk length—msw ratio 5.2:1, trunk length—sw-12 ratio 5.9:1; flexible penis spines 20 μ in length, originating from anterolateral margin of terminal sternal plates; accessory lateral spines 40 μ in length, shorter than those of female; lateral terminal spines longer than in female, 238 μ in length, 0.62 \times trunk length.

The range in trunk length for all females examined was 380–420 μ ; all but the holotype were mounted laterally, preventing further range measurements concerning width. Lateral terminal spines measured 210–224 μ in length,

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0.50–0.59 \times the trunk length; lateral accessory spines measured 67–80 μ in length, 0.28–0.32 \times the lateral terminal spine length; middorsal spines of segments 6, 8, and 10 measured 73–76 μ , 92–110 μ and 115–126 μ in length; lateral spines were more nearly equal in length, measuring 34–45 μ .

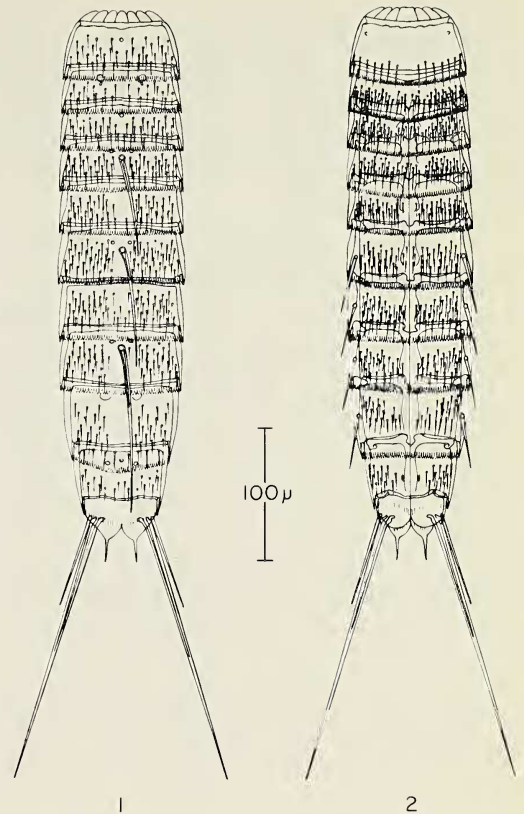
The range in trunk length for all males examined was 382–420 μ ; the maximum sternal width occurred at segment 10 and measured 73–80 μ , giving a trunk length–msw ratio of 5.2:1 in all males. The sternal width at segment 12 measured 65–71 μ , giving a trunk length–sw-12 ratio of 5.9:1 in all males. Lateral terminal spines measured 230–238 μ in length, 0.55–0.62 \times the trunk length; the lateral accessory spines were measured only in the allotype; middorsal spines of segments 6, 8, and 10 measured 79–89 μ , 98–105 μ and 105–115 μ in length; lateral spines were more nearly equal in length, measuring 33–44 μ .

TYPE LOCALITY: 74.5° N, 163.9° W, from a depth of 747 m.

MATERIAL EXAMINED: Six specimens; four females and two males. Holotypic female (author's number K 57.1) and one other female from type locality, station 360, Arctic Research Laboratory Ice Station 1 (ARLIS-1, from which the species name is derived), off Point Barrow, Alaska, collected by John Tibbs, 16–17 January 1961. Allotypic male (author's number K 58.4) one other male and two females from station 446 (74.8° N, 165.6° W), ARLIS-1, collected by John Tibbs, 9–10 February 1961, from a depth of 419 m.

DISPOSITION OF TYPES: Holotypic female (USNM 32924), and allotypic male (USNM 32923) have been deposited in the marine invertebrate collection of the U. S. National Museum. The remaining paratypes are in the author's personal collection.

REMARKS: *Echinoderes arlis* n. sp. is within the size limits of several species including *E. pilosus* Lang, 1949, *E. bengalensis* (Timm, 1958), *E. pennaki* Higgins, 1960, and *E. brevispinosus* Higgins, 1966, but differs from these by having elongate middorsal spines on segments 6, 8, and 10. Only one species, *E. riedli* Higgins, 1965, has the same middorsal spine arrangement and this is a very small



FIGS. 1 and 2. *Echinoderes arlis* n. sp., holotypic female, neck and trunk segments (head retracted). Fig. 1, dorsal aspect; Fig. 2, ventral aspect.

species, 228 μ in length, recently described from the Red Sea.

The lateral spination of *E. arlis* n. sp. is shared by *E. setigera* Greeff, 1869, *E. pilosus* and *E. levanderi* Karling, 1954, but other than for *E. setigera*, whose middorsal spines are on segments 6, 7, and 9, the remainder have a full complement of middorsal spines on segments 6 through 10.

In addition, *E. arlis* n. sp. differs from all other members of this genus by the shape of the terminal border of segment 13.

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REFERENCES

- BÜTSCHLI, O. 1876. Untersuchungen über freilebende Nematoden und die Gattung *Chaetonotus*. Z. wiss. Zool. 26:363-413.
- CLAPARÉDE, E. 1863. Beobachtungen über Anatomie und Entwicklungsgeschichte wirbelloser Tiere an der Küste der Normandie angestellt. Wilhelm Engelmann, Leipzig. 120 pp. + 18 pls.
- GREEFF, R. 1869. Untersuchungen über einige merkwürdige Formen des Arthropoden- und Wurm-Typus. Arch. Naturgesch. 35(1):71-100.
- HIGGINS, R. P. 1960. A new species of *Echinoderes* (Kinorhyncha) from Puget Sound. Trans. Am. Microscop. Soc. 79:85-91.
- 1966. Faunistic studies in the Red Sea (In winter, 1961-62). Kinorhynchs from the area of Al-Ghardaqa. Zool. Jarb. Syst. 93:118-126.
- KARLING, T. G. 1954. *Echinoderes levanderi* n. sp. (Kinorhyncha) aus der Ostsee. Ark. Zool. (N.S.) 7(7):189-192.
- LANG, K. 1949. Echinoderida. Further Zoological Results of the Swedish Antarctic Expedition 1901-1903, 4(2):1-22.
- LEVANDER, K. M. 1900. Über das Herbst- und Winterplankton im finnischen Meerbusen und in der Alands-See, 1898. Acta Soc. pro Fauna et Flora Fennica 18(5):19.
- SCHEPOTIEFF, A. 1907. Zur Systematik der Nematodeen. Zool. Anz. 31(5-6):132-161.
- STEINER, G. 1919. Zur Kenntnis der Kinorhyncha nebst Bemerkungen über ihr Verwandtschaftsverhältnis zu den Nematoden. Zool. Anz. 50(8):177-187.
- TIMM, R. W. 1958. Two new species of *Echinoderella* (Phylum Kinorhyncha) from the Bay of Bengal. J. Bombay Nat. Hist. Soc. 55(1):107-109.
- ZELINKA, K. 1907. Zur Kenntnis der Echinoderen. Zool. Anz. 32(5):130-136.